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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,717	01/22/2004	Kwang H. Lee	A434-JN	5195

7590 06/01/2005  
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EXAMINER

HECKENBERG JR, DONALD H

ART UNIT PAPER NUMBER

1722

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/762,717

Applicant(s)

LEE, KWANG H.

Examiner

Donald Heckenberg

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1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,9-11,15 and 16 is/are rejected.
- 7) ☒ Claim(s) 2,6-8 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

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1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Cooper (U.S. Pat. No. 3,985,178).

Cooper discloses an investment casting apparatus. In the embodiment depicted in Figs. 9 and 10, the apparatus comprises a runner bar (22) for connecting to a base unit (27) surrounded by a casting ring (29). A plurality of sprues are connected at one of their ends to the runner bar, with each sprue having the other end for connecting to a wax structure (24) formed in the pattern to be cast (Figs. 9 and 10). An adapter (20) is disposed at the runner bar connecting end of each of the sprues. The adapter (20) is sized and shaped to lock onto the runner bar (22) in a secure engagement. As shown in cross-section of Fig. 10, the adapter's inner surface is curved so as to wrap around

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the runner bar (22), such that the adapter is sized and shaped to cover over half of the circumference of the runner bar.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 3, 4, 9, 10, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper in view of Engelman et al. (U.S. Pat. No. 4,741,378).

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Cooper discloses the investment casting apparatus as described above. Cooper does not disclose the sprue to have a reservoir formed therein, nor the sprue to be hollow.

Engelman discloses a sprue pin for producing castings. The sprue pin is hollow (see Fig. 2), and has a reservoir (14) formed thereon. Engelman notes that this sprue pin structure improves material flow rates during the subsequent casting, which in turn produces better castings (cl. 1, l. 58 - cl. 2, l. 49).

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to have modified the apparatus disclosed by Cooper as such to have made the sprue pin hollow and comprise a reservoir because such a sprue structure improves material flow rates during subsequent casting as suggested by Engelman.

7. Claim 2, 6-8, and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

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The prior art of record fails to teach or suggest a spruing assembly as defined in claims 2, 6-8, and 12-14 of the instant application. The closest prior art disclosed by Cooper is described above. Cooper fails to teach or suggest the adaptor of the sprue pin to have a radius which is longer than a radius of the sprue holding member (or runner bar) as defined in claims 2, 6, and 12.

9. The following references cited but not relied upon are deemed pertinent to the instant application:

Thomas (U.S. Pat. No. 4,972,897) discloses a spiral sprue loop.

Berger (U.S. Pat. No. 5,688,533) discloses a round ringless mold and triangular spoke sprue.

Bell (U.S. Pat. No. 6,467,530) discloses an apparatus for forming a pour hole and main sprue in an investment mold for lost wax casting.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Heckenberg whose telephone number is (571) 272-1131. The

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examiner can normally be reached on Monday through Friday from 9:30 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech, can be reached at (571) 272-1137. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<<http://pair-direct.uspto.gov>>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

  
Donald Heckenberg  
Patent Examiner  
A.U. 1722

S-28-5